

Name: \_\_\_\_\_

### p1107: Factoring by Grouping (v1)

Consider the expression:

$$6x^2 + 4x + 21x + 14$$

Notice there is one quadratic term, two linear terms, and one constant. Also, notice that  $6 \cdot 14 = 4 \cdot 21$ . Thus the expression is ready to be factored by grouping.

1. For the two first terms,  $6x^2$  and  $4x$ , the greatest common factor is  $2x$ . Factor it out.

$$2x(3x + 2) + 21x + 14$$

2. For the last two terms,  $21x$  and  $14$ , the greatest common factor is  $7$ . Factor it out.

$$2x(3x + 2) + 7(3x + 2)$$

3. Now we have two terms,  $2x(3x + 2)$  and  $7(3x + 2)$ , and both terms share a factor of  $(3x + 2)$ , so we can apply distributive property... backwards... to factor the expression.

$$(3x + 2)(2x + 7)$$

#### Question 1

Factor by grouping:

$$10x^2 + 8x + 15x + 12$$

#### Question 2

Factor by grouping:

$$6x^2 + 21x + 4x + 14$$

**Question 3**

Factor by grouping:

$$15x^2 + 10x - 12x - 8$$

**Question 4**

Factor by grouping:

$$10x^2 - 6x - 25x + 15$$

**Question 5**

Factor by grouping:

$$4x^2 - 10x - 14x + 35$$